

REMARKS

Claims 1-13 and 15-26 are pending in the application upon entry of the amendments. Claims 6 and 15 have been amended for consistency and to better describe certain aspects of the invention. Since the amendments do not require further searching and/or place the application in condition for allowance, entry is respectfully requested. Favorable reconsideration in light of the amendments and the remarks which follow is respectfully requested.

Objection to the Claims

Claim 15 has been objected to for a misspelling. Claim 15 has been amended as suggested by the Examiner.

The Indefiniteness Rejection

Claim 6 has been rejected under 35 U.S.C. §112, second paragraph, for a typographical error. The subject brightener has been better specified as suggested by the Examiner.

The Invention

Before distinguishing the cited art, a brief overview of the invention is in order. The invention relates to making high quality quaternary Ni-Co alloys using a bath containing nickel ions, cobalt ions, at least two ionic alloy metals, and an acetylenic brightener. Novelty is not disputed. The high quality quaternary Ni-Co alloys are achievable due to the presence of the acetylenic brightener. This is because the presence of an acetylenic brightener causes the uniform placement of the at least two ionic alloy metals within the matrix of a Ni-Co base alloy. This action is not easy since each metal plates at a different rate depending upon conditions such as temperature, concentration, pH, current, and the like. A more attractive quaternary alloy results because the four metals plate with substantially uniform distribution.

The Obviousness Rejection Involving Independent Claim 1

Claims 1-6, 8, and 24 have been rejected under 35 U.S.C. §103(a) over JP 10-245693 (hereinafter "JP '693") in view of Passal (U.S. Patent 3,697,391). JP '693 relates to forming a nickel alloy with good adhesion on an insulator such as ceramic, glass, or plastic by electroplating a nickel salt and a water-soluble salt of one or more elements selected from boron, cobalt, copper, iron, manganese, phosphorus, tin, and zinc in the presence of a specific brightener. JP '693 solves the problem of electroplating nickel alloys to insulators by requiring a N-heterocyclic quaternary ammonium salt as a brightener for the specific purpose of making an effective nickel alloy deposit. JP '693 specifically mentions that deposit conditions change greatly with the class of brightener.

Passal relates to a process for electroplating Ni, Co, or Ni-Co alloys. The Examiner nevertheless contends that Passal teaches the deposition of a quaternary alloy. Passal uses a primary brightener (numerous brighteners listed including acetylenics), a secondary brightener, and an organic hydroxy-sulfonate adduct to improve tolerance to metallic impurities.

The Examiner contends that it would have been obvious to modify the method of JP '693 by using one of the brighteners of Passal. Applicants respectfully disagree for at least four reasons.

There Is No Motivation to Contravene the Teachings of JP '693

First, one skilled in the art would NOT have replaced the quaternary ammonium salt brightener of JP '693 with the acetylenic brightener of Passal because this would FRUSTRATE the purpose and teachings of JP '693. The purpose of JP '693 is to provide Ni alloys that effectively bond to insulators. The problem addressed by JP '693 is the inability to plate Ni alloys on insulator substrates. JP '693 solves the problem of electroplating nickel alloys to insulators by requiring a N-heterocyclic quaternary ammonium salt as a brightener for the specific purpose of making an effective nickel

alloy deposit. JP '693 is unconcerned with the appearance of the resultant nickel alloy, as there is no mention of any desire for an attractive plate.

In the metal plating arts, having a matte or grainy surface means that the metal plate has a larger surface area and thus a greater ability to bond to a given substrate. Since the main purpose of JP '693 is to improve the bonding of Ni alloys to an insulator, one skilled in the art would not have modified JP '693 by using a compound such as a brightener that would DECREASE the resultant Ni alloys ability to bond to an insulator by increasing its matte or grainy surface. In other words, one skilled in the art would NOT have frustrated the purpose of JP '693 by including an additive that would impede the bonding between its plated alloy and substrate.

Moreover, JP '693 specifically mentions that deposit conditions change greatly with the class of brightener. And the invention of JP '693 is predicated on the discovery of a specific brightener that provides Ni alloys securely plated on an insulator. Consequently, one skilled in the art would not ignore the objectives of JP '693 and change one of its fundamental elements. Changing the brightener in JP '693 would undermine and vitiate the basic teachings of JP '693, and render its disclosed discovery impotent.

Passal Says Nothing Specifically of Acetylenic Brighteners

Second, one skilled in the art would NOT have replaced the quaternary ammonium salt brightener of JP '693 with the acetylenic brightener of Passal because there is NO teaching or suggestion in Passal indicating that its acetylenic brighteners would be effective for improving the appearance of quaternary Ni-Co-M1-M2 alloys (wherein M1 and M2 are two alloy metals). That is, there is NO teaching or suggestion in Passal indicating that its acetylenic brighteners cause the uniform placement of additional metals within the matrix of a Ni-Co alloy.

In order to support the Examiner's combination, the Examiner cites functions (1) to (4) of Column 3 of Passal attributable to the primary brighteners, secondary

brighteners, and secondary auxiliary brighteners. However, this contention is based only on impermissible hindsight, made with the guidance of the instant specification.

The beneficial functions (1) to (4) on page 9 of the Office Action are general desirable effects, and Passal indicates that these desirable effects provided by the listed primary brighteners, the listed secondary brighteners, and the listed secondary auxiliary brighteners. However, Passal fails to teach or suggest which specific beneficial functions (1) to (4) are enabled by the specifically listed primary brighteners, secondary brighteners, and secondary auxiliary brighteners. Moreover, Passal fails to teach or suggest which specific beneficial functions (1) to (4) are enabled by acetylenic brighteners.

In this connection, Passal describes four generic groups and ten specific compounds of primary brighteners, four generic groups and five specific compounds of secondary brighteners, and twelve generic groups and seven specific compounds of auxiliary secondary brighteners. Passal fails to teach or suggest any specific function for any specific primary brighteners, secondary brighteners, and secondary auxiliary brighteners. Thus, there is no teaching or suggestion of any particular function of acetylenic brighteners by Passal. One skilled in the art would be hard-pressed to determine which of four beneficial functions are associated with each of the 20 generic groups and 22 specific compounds of brighteners listed.

In the absence of a specific teaching regarding the ability of acetylenic brighteners to improve the appearance of quaternary Ni-Co-M1-M2 alloys, one skilled in the art would NOT have replaced the quaternary ammonium salt brightener of JP '693 with the acetylenic brightener of Passal.

Ammonium Salt Brighteners and Acetylenic Brighteners Are Not Equivalent

Third, one skilled in the art would NOT have replaced the quaternary ammonium salt brightener of JP '693 with the acetylenic brightener of Passal because of resultant changes in bath conductivity that would impact plating efficiency. Acetylenic brighteners and quaternary ammonium salt brighteners are different and not equivalent.

One general difference is the different impacts they have on bath conductivity. JP '693 employs quaternary ammonium salt brighteners, which are ionic brighteners. JP '693 also describes conditions required to form secure nickel alloy plating on insulator substrates. Since the salt brighteners of JP '693 contribute to the conductivity of its electroplating bath, one skilled in the art would NOT change the conductivity of JP '693 electroplating bath by substituting an acetylenic brightener for its quaternary ammonium salt brighteners. Thus, for this additional reason, there would be NO motivation for one skilled in the art to employ an acetylenic brightener in JP '693.

Cited Art Does Not Disclose All Claim Features

And fourth, even if combined, neither JP '693 nor Passal teach or suggest quaternary Ni-Co alloys. While JP '693 generically mentions nickel alloys containing one or more of boron, cobalt, copper, iron, manganese, phosphorus, tin, and zinc, JP '693 fails to teach or suggest any quaternary alloys including quaternary Ni-Co alloys. The only alloys specifically mentioned in JP '693 are binary alloys and ternary alloys.

Passal describes Ni, Co, and Ni-Co alloys. The Examiner contends that Passal describes quaternary alloys at page 8 of the Office Action. There is no reasonable basis for the Examiner's contention. One of the primary teachings of Passal is the lack of plating or voids in the resultant plate caused by impurities. While Passal in Column 1 mentions metallic impurities in a plating bath, Passal does NOT mention quaternary Ni-Co alloys. In the instance where a bronze substrate is plated, the organic hydroxy-sulfonate adduct PREVENTS metallic impurities from plating.

Since neither JP '693 nor Passal teach or suggest quaternary Ni-Co alloys, JP '693 and Passal even if combined fail to teach or suggest all features of the claims. Withdrawal of the rejection for this additional reason is respectfully requested.

The Obviousness Rejection Involving Dependent Claim 7

Claim 13 has been rejected under 35 U.S.C. §103(a) over JP '693 in combination with Passal further in view of Hui (U.S. Patent 6,372,118). Claim 7 is NOT obvious

over JP '693, Passal, and Hui for substantially the same reasons that claim 1 is not obvious over JP '693 and Passal.

The Obviousness Rejection Involving Independent Claim 9

Claims 9-12, 15-17, and 25 have been rejected under 35 U.S.C. §103(a) over JP '693 in view of Passal. Independent claim 9 and claims dependent therefrom are NOT obvious over JP '693 and Passal for substantially the same reasons that claim 1 is not obvious over JP '693 and Passal (one skilled in the art would not have modified JP '693 with an acetylenic brightener of Passal).

The Obviousness Rejection Involving Dependent Claim 13

Claim 13 has been rejected under 35 U.S.C. §103(a) over JP '693 in combination with Passal further in view of SU 1,544,847 (hereinafter "SU '847"). Claim 13 is NOT obvious over JP '693, Passal, and SU '847 for substantially the same reasons that claim 9 is not obvious over JP '693 and Passal.

The Obviousness Rejection Involving Independent Claim 18

Claims 18-23 and 26 have been rejected under 35 U.S.C. §103(a) over JP '693 in view of Passal. Claims 18-23 and 26 are NOT obvious over JP '693 and Passal for substantially the same reasons that claim 1 is not obvious over JP '693 and Passal (one skilled in the art would not have modified JP '693 with an acetylenic brightener of Passal).

Specifically Regarding Claim 22

Claim 22 is patentable for the additional reason that the contention that one skilled in the art would have modified the pH to improve tolerance to metallic ions as taught by Passal is faulty. Conductivity salts are neutral salts that change the ionic strength of the electroplating bath. Consequently, conductivity salts generally do not

change the pH. Passal does not teach or suggest adding a conductivity salt to an electroplating bath.

Petition for Extension of Time

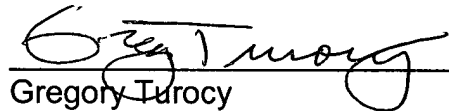
A request for a one month extension of time is hereby made (small entity status has been established). A Credit Card charge form is enclosed herewith to pay the petition fees.

Should the Examiner believe that a telephone interview would be helpful to expedite favorable prosecution, the Examiner is invited to contact Applicants' undersigned attorney at the telephone number listed below.

In the event any fees are due in connection with the filing of this document, the Commissioner is authorized to charge those fees to our Deposit Account No. 50-1063.

Respectfully submitted,

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